

## SEED QUALITY AND MYCOFLORA ASSOCIATED WITH BOLD AND WRINKLED SEEDS OF COWPEA

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Seed quality parameters and mycoflora associated with bold and wrinkled seeds of cowpea cv. Pusa barasati and Pusa phalguni was investigated during 2006 (*kharij*). Both types of seeds yielded qualitatively similar fungi viz. *Alternaria alternata*, *Aspergillus flavus*, *A. niger*, *Curvularia lunata*, *Fusarium sp.*, *Penicillium citrinum* and *Rhizopus nigricans*, but for difference in their percentage of incidence. Percentage of seed colonised by fungi was more in wrinkled seeds in both cultivars. Bold seeds were superior with respect to seed quality parameters such as 100-seed weight, germination, plumule length, radicle length and seedling dry weight as compared to wrinkled seeds.

**Keywords :** Fungi; Germination; Plumule; Radicle; Wrinkled seed.

Cowpea (*Vigna unguiculata* L.) is an important pulse crop cultivated throughout India. Seed of cowpea is known to harbor several species of fungi. The invasion of fungi brings about the degradation of seed constituents, *i.e.* carbohydrates, protein, fat and vitamins and accumulation of toxic metabolites, thus rendering seeds unfit for useful purposes. Apart from this, the seed germination and seedling vigour is also considerably affected. Hence, the present investigation was carried out on cowpea to study the effect of bold and wrinkled seeds on seed quality parameters and invasion of Fungal flora.

Seed samples of cowpea cv. Pusa barasati and Pusa phalguni were collected from State Seed Testing Laboratory, Nagpur and graded into two categories viz. bold and wrinkled seeds. The fungal flora associated with the seeds were detected by the standard moist blotter and agar medium techniques as prescribed by ISTA<sup>1</sup>. The different types of fungal growth on the seeds were expressed in percentage. On these graded seeds were performed the following laboratory tests such as 100-seed weight, Standard germination test, plumule length, radicle length and dry weight of seedling<sup>2</sup>.

It might be seen from the Table 1 that nine species of fungi viz. *Alternaria alternata*, *Aspergillus flavus*, *Aspergillus niger*, *Cladosporium fulvum*, *Curvularia lunata*, *Fusarium moniliforme*, *Fusarium oxysporum*, *Penicillium citrinum* and *Rhizopus nigricans* were isolated from the bold and wrinkled seeds of Cowpea cv. Pusa barasati and Pusa phalguni. The incidence percentage of isolated fungal flora was higher on wrinkled seeds than those of bold seeds. Reddy and Subbayya<sup>3</sup>, Charjan and

Tarar<sup>4</sup> reported the percentage of seed colonised by fungi in the discoloured wrinkled seed of blackgram and greengram respectively was higher than those of normal bold seeds. Among the two cultivars, Pusa barasati showed higher incidence percentage of fungal flora in bold and wrinkled seeds than those of Pusa phalguni.

One hundred seed weight of the bold seeds showed higher than wrinkled seeds in both cultivar. Aguiar and Nakane<sup>5</sup> also made similar observation. Similarly bold seeds were superior with respect to germination, plumule length, radicle length and seedling dry weight as compared to wrinkled seeds. The results reported here are in conformity with the observations made by earlier workers<sup>6,7</sup>. Probably reason for low germination in wrinkled seeds may be the presence of immature seeds<sup>8,9</sup>. The increased root length and seedling dry weight found in bold seeds, this might be due to efficient utilization of large food reserve and greater amount of production of energy. Similar observation has been made by Singh *et al.*<sup>10</sup>. Teggi and Hiremath<sup>11</sup> reported culture filtrate of *Aspergillus flavus*, *Alternaria alternata*, *Colletotrichum sp.* and *Cladosporium fulvum* affected the germination and seedling growth most severely.

The results suggested that it is desirable to avoid seed lot of cowpea with higher percentage of wrinkled seed for sowing or consumption purposes.

### References

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**Table 1.** Mycoflora associated with bold and wrinkled seeds of cowpea cv. Pusa barsati and Pusa phalguni.

Sr. No.	Name of fungi	Pusa barsati		Pusa phalguni	
1	<i>Alternaria alternata</i>	5	10	3	7
2	<i>Aspergillus flavus</i>	10	21	8	15
3	<i>Aspergillus niger</i>	8	19	5	10
4	<i>Cladosporium fulvurn</i>	4	13	2	12
5	<i>Curvularia lunata</i>	7	17	6	15
6	<i>Fusarium moniliforme</i>	8	24	6	18
7	<i>Fusarium oxysporium</i>	2	5	2	6
8	<i>Penicillium citrinum</i>	9	19	5	9
9	<i>Rhizopus nigricans</i>	8	27	5	19
	Total incidence percentage of fungi	61	155	42	111

**Table 2.** Effect of bold and wrinkled seeds on quality parameters of cowpea cv. Pusa barsati and Pusa phalguni.

Category of seeds	100 seed weight (g)	Standard germination (%)	Plumule length (cm)	Radicle length (cm)	Seedling dry weight (g)
Pusa barsati					
Bold	10.19	96	19.92	27.42	0.79
wrinkled	6.86	42	9.26	12.16	0.40
Pusa phalguni					
Bold	9.98	98	20.89	30.42	0.18
wrinkled	6.14	49	10.96	14.96	0.47

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